44. The method of claim 41 wherein said recombinase comprises RecA.

45. The method of claim 41 wherein said recombinase comprises Rad51.

REMARKS

Claims 1-37 and 39 have been cancelled with reservation of the right of Applicant to prosecute these claims in a continuing application. Claims 41-45 have been added. Claims 41-43 substantially correspond to originally filed claims 38, 39 and 40. The reference to chloroplast has been deleted. Claims 44 and 45 call for RecA and Rad51 as the recombinase. Support for these claims can be found at page 18, lines 8-11 of the specification. Accordingly, the methods of claims 41-45 are directed to altering a nucleic sequence of mitochondria of the cell.

In the September 5, 2000 Office Action two groups were identified for restriction. Group I related to methods to alter a chromosomal sequence or a mitochrondrial nucleic acid sequence whereas Group II correspond to methods to alter chloroplast nucleic acid. In response to this restriction requirement, Applicant elected Group I.

In the February 5, 2001 Office Action at page 5, the Examiner stated that the then pending:

> Claims 38 and 40 are free of the prior art. At the time of filing, the art did not teach or suggest methods of altering the nucleic acid sequence of mitochondria by any methodology much less the methodology claimed.

In the same Office Action at page 2, the Examiner indicated that the specification is

> . . . enabling for methods comprising altering a chromosomal sequence of a nucleus, by introducing a pair of single-stranded targeting DNA segments associated with a recombinase into said donor nucleus wherein said targeting DNA segments are homologous to each other and each comprising a homology clamp that is homologous to a targeted DNA sequence of said nucleus to provide a modified nucleus.

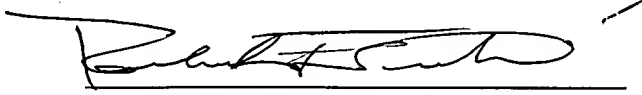
The pending claims do not contain any step requiring the transplantation of a recombinant nucleus into a oocyte to produce a recombinate zygote. Rather, the claims are directed specifically to altering nucleic acid sequence of a mitochrondria of a cell by a method which the Examiner previously agreed was enabled with regard to targeting chromosomal material in the nucleus. Since the Examiner has recognized that the specification is enabling for the steps of the pending claims, Applicant agrees with the Examiner and submits that claims 41-43 are enabled.

CONCLUSION

Claims 41-43 are free of the prior art and are enabled by analogy to the Examiner's previous statements regarding enablement for chromosomal modifications. As such, it is submitted that the claims are in condition for allowance and a prompt notice to that effect is respectfully requested.

Respectfully submitted,
DORSEY & WHITNEY LLP

Date January 13, 2003



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VERSION SHOWING CHANGES MADE

Please cancel claims 1-37 and 39.

Please add the following new claims:

41. [New] A method of altering a nucleic acid sequence of a mitochondria of a cell comprising: introducing into a cell a pair of single-stranded targeting polynucleotides, and a recombinase, wherein said targeting polynucleotides of said pair are substantially complementary to each other, and each comprise a homology clamp that substantially corresponds to or is substantially complementary to a predetermined nucleic acid sequence of said mitochondria, whereby said sequence is altered.

42. [New] The method of claim 41 wherein said cell is a plant cell.

43. [New] The method of claim 41 wherein said pair of single-stranded targeting

44. [New] The method of claim 41 wherein said recombinase comprises RecA.

45. [New] The method of claim 41 wherein said recombinase comprises Rad51.